McMaster University | HEALTH SCIENCES

Education Program in Anatomy
Health Sciences Centre: HSC 1R1D
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Irena Alexandra Rebalka

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HIGHEST EDUCATION

Doctor of Philosophy: Medical Sciences
2012 – 2017 McMaster University, Hamilton, ON
Thesis: The inhibition of PAI-1 for restoration of skeletal muscle and skin repair in diabetes mellitus

CURRENT ROLE

Assistant Professor (Full Time)
January 2023 – Present
Department of Pathology and Molecular Medicine, Faculty of Health Sciences: McMaster University
Current teaching responsibilities: Human Pathophysiology, HTHSCI 4K03
Pathoanatomy, HTHSCI 4G03
Human Anatomy and Physiology I, HTHSCI 2F03/2L03/1D06
Human Anatomy and Physiology II, HTHSCI 2FF3/2LL3
Course Coordinator, HTHSCI 2L03 and HTHSCI 2LL3
Student supervision: 6 UG thesis (63 units), 1 full-time co-op student

INVITED SPEAKER, 2023-2025

2025 - Trainee Research Symposium Chairperson, Advances in Skeletal Muscle Biology Conference
2024 - Cell Biology Award Symposium Chairperson, American Association for Anatomy Connected Conference
- The Norman Education Research Day Conference: McMaster Health Education Research, Innovation and Theory Centre
- American Diabetes Association Scientific Sessions Chairperson
- Northern Ontario School of Medicine Undergraduate Medical Education Program Seminar

2023 - York University Muscle Health Research Centre Seminar
- McMaster Center for Metabolism, Obesity and Diabetes Research Seminar
- American Diabetes Association Scientific Sessions
- Michael G. DeGroote Institute for Pain Research and Care Annual Research Day
- Northern Ontario School of Medicine Seminar

SELECT HONOURS AND AWARDS, 2023-2025

2025 - 2024 Department of Science Co-op Employer of the Year
2024 - Pathology and Molecular Medicine Academic and Research Faculty Teaching Excellence Award 2024
- McMaster Student Union Teaching Awards Finalist: Top Professor in Faculty of Health Sciences

FUNDED RESEARCH GRANTS, 2023-2025

2024 - $2,000 – MacPherson Institute Student Partners Program – Exploring undergraduate interest in molecular techniques in modern exercise. PI: Nederveen. Co-I: Rebalka, Ng, Prior, Minhas
- $3,000 – Canadian Longitudinal Study on Aging (CLSA) – Investigating prevalence and predictors of musculoskeletal pain in individuals with type 1 diabetes using data from the CLSA. PI: Rebalka
- $7,000 – Laboratory Medicine Residency Program Resident Research Grant – Muscle Ultrastructural Changes in Type 1 Diabetes with Exercise. Resident: Murphy. PI: Rebalka. Co-I: Lu
- $6,000 – Natural Sciences and Engineering Research Council of Canada Undergraduate Student

Research Award – Investigating the relationship between oxidative stress and amino acid transport in skeletal muscle. Student: Marlatt

- $30,000 – Michael G. DeGroote Institute for Pain Research and Care Seed grant – The validation of a proposed mechanism for statin-induced myalgia *in vivo.* PI: Rebalka

2023
- $18,645 – Faculty of Health Sciences, McMaster University Infrastructure Grant. PI: Rebalka
- $24,197 – Faculty of Health Sciences, McMaster University Infrastructure Grant. PI: Rebalka
- $25,000 – McMaster Health Education Research, Innovation and Theory Education Scholarship Fund – Comparison of three visual modalities for the assessment of anatomy knowledge. PI: Rebalka
- $150,000 – Canadian Space Agency – Understanding the effects of radiation and microgravity with and without nutraceutical supplementation. PI: MacLean. Co-I: Boreham, Thome, Rebalka, Hawke
- $67,935 – Industry Partnership – The Better Butchers; The development of a stable cell line for generation of cultivated meat products. Co-PI: Hawke, Rebalka

PUBLICATIONS, 2023-2025 *My trainees denoted with **

SUBMITTED FOR PUBLICATION:

- **Rebalka**, Alshamali, vanLieshout, Gingrich, *Marlatt, Simpson, Hawke. Lipophilic statin therapy decreases sympathetic cardiac load without affecting skeletal muscle health or function in geriatric rats. J Gerontol Biological Sciences.
- McCue, **Rebalka**, Paquette, Hawke, MacLean. Tumour growth and chemotherapy alter skeletal muscle, cardiac, and hepatic amino acid pools in mice. AJP Cell Physiology.

IN PRESS:

- *Sun, *Zhang, Marshall, Mitchell, Laprade, Nederveen, Helli, **Rebalka**. A comparison of bellringer performance in three visual modalities for the assessment of anatomy knowledge. Anatomical Sciences Education.
- McCue, **Rebalka**, Hawke, MacLean. Examining tissue-level changes in Doxorubicin accumulation and Nitric Oxide formation in skeletal muscle and tumours in a mouse model of breast cancer. Canadian Journal of Physiology and Pharmacology.
- Horii, Bumrungkit, Yanaka, Hawke, **Rebalka**, Kumrungsee. Effects of oral gamma-aminobutyric acid intake on muscle regeneration in diabetic mice. AJP Cell.
- Mattina, Ng, Mikhail, Stouth, Jornacion, **Rebalka**, Hawke, Ljubicic. Volitional exercise elicits physiological and molecular improvements in the severe D2.mdx mouse model of Duchenne muscular dystrophy. J Phys.

PUBLISHED:

- Steele, Syroid, Mombo, Raveetharan, **Rebalka**, Hawke (2024). Isolation of a persistently quiescent muscle satellite cell population. AJP Cell Physiol, 327(2).
- **Rebalka**, Noguchi, *Bulyovsky, Badour, Juracic, Barrett, Brahmbhatt, Al-Khazraji, Punthakee, Perry, Kumbhare, MacDonald, Hawke (2024). Targeting skeletal muscle health with exercise in people with type 1 diabetes: a protocol for HOMET1D, a prospective observational trial with matched controls. PLOS One, 19(5).
- Martin, Al-Sajee, Gingrich, Chattha, Akcan, Monaco, Hughes, Perry, **Rebalka**, Tarnopolsky, Hawke (2024). Skeletal Muscle Mitochondrial Morphology Negatively Affected by Loss of Xin. Biochem Cell Biol, 102(5).
- Bellissimo, Gandhi, Castellani, Murugathasan, Delfinis, Thuhan, Garibotti, Seo, **Rebalka**, Hsu, Sweeney, Hawke, Abdul-Sater, Perry (2023). The slow-release adiponectin analogue ALY688-SR modifies early-stage disease development in the D2.mdx mouse model of Duchenne muscular dystrophy. AJP Cell Phys, 326(4).
- Wang, Townsend, DesOrmeaux, Frangos, Batchuluun, Dumont, Kuhre, Ahmadi, Hu, **Rebalka**, Gautam, Jabile, Pileggi, Rehal, Desjardins, Tsakiridis, Lally, Juracic, Tupling, Gerstein, Paré, Tsakiridis, Harper, Hawke, Speakman, Blondin, Holloway, Jørgensen, Steinberg (2023). GDF15 promotes weight loss by enhancing energy expenditure in muscle. Nature, 619.
- Xhuti, **Rebalka**, Minhas, May, Nederveen, Tarnopolsky (2023). The acute effect of multi-ingredient antioxidant supplementation following ionizing radiation. Nutrients, 15.